

CLAIMS

1. (Previously presented) Electronic spectacles, especially night-vision spectacles (10) comprising;

an electronic camera (26) integrated into said spectacles as the primary recording means for the user of said spectacles, said camera being provided with an objective lens and a CCD sensor;

an image-processing unit (48) connected downline from said camera (26) electronically processes an image recorded by said camera (26) and sends an output signal to display means (28, 30), one of which is assigned to each eye, for reproduction of an image;

an eyepiece lens (32, 34), one of which is connected downline from each display means (28, 30);

said image-processing unit includes a digitized preamp stage which removes noise and interference in the near-infrared range approximately at wavelengths of 650-1200 nm from said signal coming from said camera (26);

said preamp stage is followed by a digital/analog converter, said signal subjected to further processing as an analog signal at the standard PAL level of 1V peak-to-peak;

said camera (26), said image-processing unit, said display means (28, 30), and said eyepiece lens (32, 34) generate a displayed image which accurately represents in real time relationships and accurate dimensions of objects which the user would see in a direct view without restriction.

2. (Previously presented) Electronic spectacles according to Claim 1, characterized in that, when the user's eyes are in a certain base position, namely, a position corresponding to a straight-ahead view, the center axis of the display means (28, 30), the optical axis of said eyepiece lens (32, 34), and the associated axis of the user's eye are aligned concentrically with each other.

3. (Previously presented) Electronic spectacles according to Claim 1, characterized in that, to guarantee that the user will see a sharp image, each of said eyepiece lenses (32, 34) of each of said display means (28, 30) is independently adjustable along the optical axis relative to each said respective display means (28, 30).

4. (Previously presented) Electronic spectacles according to Claim 1, characterized in that each display means (28, 30) is provided with two cameras (26) and two image-processing units (48), the processing steps of which are synchronized with each other.

5. (Original) Electronic spectacles according to Claim 4, characterized in that the optical axes of the camera (26) are concentric to the ocular axes of the user in the base position.

6. (Previously presented) Electronic spectacles according to Claim 1, characterized in that the display means (28, 30) are mounted in a fixed carrier (24) and are supported so that they can shift laterally in the carrier (24) with respect to the orientation of the ocular axes, where the carrier (24) is fixed in place in the spectacle frame (12).

7. (Original) Electronic spectacles according to Claim 6, characterized in that the objective lens and the image-processing unit (48) are mounted in the carrier (24) in such a way that the fixed carrier (24) ensures that all of the parts mounted on the carrier (24) are in a predetermined relationship to each other.

8. Cancelled.

9. (Previously presented) Electronic spectacles according to Claim 1, characterized in that the camera (26) has a CCD sensor for the night-vision range with a sensitivity for wavelengths in the range of 500-1200 nm.

10. (Currently amended) Electronic spectacles according to Claim [[8]] 1, characterized in that the camera (26) is operable at light levels of less than 0.001 lux, especially for a level of 0.0002 lux.

11. (Previously presented) Electronic spectacles according to Claim 1, characterized in that the CCD sensor has an image resolution of at least 790 x 590.

12. (Previously presented) Electronic spectacles according to Claim 1, characterized in that the display means (28, 30) is designed for black-and-white images, especially for the display of 256 shades of gray.

13-14. (Cancelled)

15. (Previously presented) Electronic spectacles according to Claim 1, characterized in that the image-processing unit (48) has two series-connected analog amplifier stages and a control voltage circuit, which calibrates the amplifier stages to zero each time an image pixel is read out on a line-by-line basis from the CCD sensor of the camera (26).

16. (Original) Electronic spectacles according to Claim 15, characterized in that the amplifier stages provide a signal amplification of more than 25 dB, especially of 52 dB, versus the standard level.

17. (Previously presented) Electronic spectacles according to Claim 15, characterized in that the amplifier stages have an external circuit, which, with respect to its design and scaling, is optimized for the amplification and transmission of signals containing image data in the black/white range.

18. (Previously presented) Electronic spectacles according to Claim 15, characterized in that the amplifier stages are provided with a closed-loop controller for the range from 5 to 52 dB, which modulates the amplifiers during rapid changes in brightness in such a way that the image is not noticeably overexposed, where in particular the controller is designed to be activated manually.

19. (Currently amended) Electronic spectacles according to ~~one~~ of Claim 15, characterized in that the amplifier stages are provided with a manually actuated open-loop controller, which the user can use to adjust the sensitivity of the amplifiers and adapt to the prevailing lighting conditions.

20. (Canceled)

21. (Currently amended) Electronic spectacles according to Claim ~~14~~ 1, characterized in that, to improve the quality of the image, at least two active signal filters in the form of bandpass filters (54) are connected downline from the digital/analog converter, which filters and reduces image noise.

Claims 22-29 (Canceled)